GEL Laboratories LLC
a member of The GEL Group INC

October 1, 2015

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

September 28, 2015

Mr. Scot Fitzgerald
CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352

Re: CHPRC SAF F15-028
Work Order: 380651
SDG: GEL380651

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on September 04, 2015. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4505.

Sincerely,

Sarah Edwards for
Heather Shaffer
Project Manager

Purchase Order: 303581 - 7H
Chain of Custody: F15-028-034
Enclosures

October 1, 2015

Table of Contents

Case Narrative

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F15-028
SDG: GEL380651

September 28, 2015

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary

Sample receipt

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on September 04, 2015, for analysis. The sample was delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Items of Note All efforts were made by the lab to meet any short hold times. Samples that were analyzed outside of the initial hold time but still within 2X hold time will be noted in the lab case narrative and DER

Sample Identification
The laboratory received the following sample:

Laboratory Identification	Sample Description
380651001	B31TW3

Case Narrative

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

Data Package

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: General Chemistry, Metals and Radiochemistry.

This package, to the best of my knowledge, is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manger (or designee) and the laboratory's client services representative as verified by their signatures on this report.

October 1, 2015

Sarah Edwards for
Heather Shaffer
Project Manager

October 1, 2015

SAMPLE ISSUE RESOLUTION

SIR NUM	SIR15-473
REV NUM	0
DATE INITIATED	9/16/2015

SAMPLE EVENT INFORMATION

SAF NUM(S)	F15-028
OPERABLE UNIT(S)	100-KR-2
PROJECT(S)	100-KE FSB
SAMPLE EVENT TITLE(S)	Characterization Boreholes in UPR-100-K-1 and 1116-KE-3 Waste Sites
LABORATORY	GEL Laboratories, LLC

SAMPLING INFORMATION

NUMBER OF SAMPLES	1
SAMPLE NUMBERS	B31TW3
SAMPLE MATRIX	WATER
COLLECTION DATE	8/26/2015 - 8/26/2015
SDG NUM	GEL380651

ISSUE BACKGROUND

CLASS	Chain of Custody Issue (Field)
TYPE	No Unit Type Noted For Sample Depths
DESCRIPTION	COC #F15-028-034, SAMPLE B31TW3. NO UNIT TYPE FOR SAMPLE DEPTH

DISPOSITION

DESCRIPTION	DOCUMENT AND CLOSE
JUSTIFICATION	DOCUMENT AND CLOSE
	SUBMITTED BY: Gayelyn Gibson DATE: 09/08/2015 ACCEPTED BY: Kirsten Killand DATE: 09/16/2015

Chain of Custody and Supporting Documentation

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 380651		F15-028-034	PAGE 1 OF 2
COLLECTOR KAUER	**COMPANY CONTACT** TODAK, D	**TELEPHONE NO.** 376-6427	**PROJECT COORDINATOR** TODAK, D	**PRICE CODE** 7H / **AIR QUALITY** ☐ / **DATA TURNAROUND** 30 Days / 30 Days
SAMPLING LOCATION C8797, Interval W-1	**PROJECT DESIGNATION** 100-KE Characterization Boreholes - Water		**SAF NO.** F15-028	
ICE CHEST NO. GWS-102	**FIELD LOGBOOK NO.** HNF-N-645 3 Pg 18	**ACTUAL SAMPLE DEPTH** 77.95	**COA** 303581	**METHOD OF SHIPMENT** FEDERAL EXPRESS / **ORIGINAL**
SHIPPED TO GEL Laboratories, LLC	**OFFSITE PROPERTY NO.** 5938		**BILL OF LADING/AIR BILL NO.** 7744 3504 1350	

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

SPECIAL HANDLING AND/OR STORAGE
RADIOACTIVE TIE TO: B32JJ1

PRESERVATION	HNO3 to pH <2	Cool <=6C	HNO3 to pH <2	HNO3 to pH <2	None	None	HNO3 to pH <2	HNO3 to pH <2	HNO3 to pH <2	None
HOLDING TIME	6 Months	14 Days	6 Months	180 Days	6 Months	6 Months	6 Months	6 Months	6 Months	6 Months
TYPE OF CONTAINER	G/P	G/P	G/P	G/P	G/P	G/P	G/P	G/P	G/P	P
NO. OF CONTAINER(S)	1	1	~~1~~ 2	1	1	2	1	1	1	1
VOLUME	500mL	250mL	~~4L~~ 1LG/P	1L	500mL	1L	~~1L~~ 1,250 mL P	1L	500mL	~~500mL~~ 1125 mL P
SAMPLE ANALYSIS	6010_METALS_ICP: COMMON {Chromium};	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	GAMMA_GS: COMMON;	AMCMISO_EIE_PRECIP_AEA: COMMON;	C14_LSC: COMMON;	I129_SEP_LEPS_GS: COMMON;	PUISO_PLATE_AEA: COMMON;	SRTOT_SEP_PRECIP_GPC: COMMON;	TC99_EIE_LSC: COMMON;	TRITIUM_DIST_LSC: COMMON;

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME								
B31TW3	WATER	8-26-15	1255	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

October 1, 2015

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
E.L. Kauer/CHPRC CHPRC	AUG 26 2015 1540	SSU #1	AUG 28 2015 1540
SSU-1	SEP 03 2015 1030	L.D. Wall CHPRC	SEP 03 2015 1030
L.D. Wall CHPRC	SEP 03 2015 1400	FEDEX	
		M. Lewis	9-4-15 0850

SPECIAL INSTRUCTIONS
TRVL-15-112
(1) 2320_ALKALINITY: COMMON {Alkalinity}; 2320_ALKALINITY: COMMON (Add-on) {Bicarbonate, Carbonate alkalinity, Hydroxylion};

LABORATORY SECTION	**RECEIVED BY**	**TITLE**	**DATE/TIME**
FINAL SAMPLE DISPOSITION	**DISPOSAL METHOD**	**DISPOSED BY**	**DATE/TIME**

PRINTED ON 8/24/2015 **FSR ID = FSR1220** **TRVL NUM = TRVL-15-112** A-6003-618 (REV 2)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 380651			F15-028-034	PAGE 2 OF 2
COLLECTOR E.L. Kauer/CHPRC	**COMPANY CONTACT** TODAK, D	**TELEPHONE NO.** 376-6427	**PROJECT COORDINATOR** TODAK, D	**PRICE CODE** 7H	**DATA TURNAROUND**
SAMPLING LOCATION C8797, Interval W-1	**PROJECT DESIGNATION** 100-KE Characterization Boreholes - Water		**SAF NO.** F15-028	**AIR QUALITY** ☐	30 Days / 30 Days
ICE CHEST NO. GWS-102	**FIELD LOGBOOK NO.** HNF-N-445 3 Pg 18	**ACTUAL SAMPLE DEPTH** 77.95	**COA** 303581	**METHOD OF SHIPMENT** FEDERAL EXPRESS	**ORIGINAL**
SHIPPED TO GEL Laboratories, LLC	**OFFSITE PROPERTY NO.** 5938		**BILL OF LADING/AIR BILL NO.** 7744 3504 1350		

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

SPECIAL HANDLING AND/OR STORAGE
RADIOACTIVE TIE TO: B32JJ1

PRESERVATION	HNO3 to pH <2
HOLDING TIME	6 Months
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	~~1L~~ 1500 mL P
SAMPLE ANALYSIS	UISO_PLATE_AEA: COMMON;

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B31TW3	WATER	8-26-15	1255	J

October 1, 2015

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM E.L. Kauer/CHPRC DATE/TIME AUG 26 2015 1540	RECEIVED BY/STORED IN SSU #1 DATE/TIME AUG 26 2015 1540	TRVL-15-112
RELINQUISHED BY/REMOVED FROM SSU-1 DATE/TIME SEP 03 2015 1030	RECEIVED BY/STORED IN L.D. Wall CHPRC DATE/TIME SEP 03 2015 1030	
RELINQUISHED BY/REMOVED FROM L.D. Wall CHPRC DATE/TIME SEP 03 2015 1400	RECEIVED BY/STORED IN FEDEX DATE/TIME	
RELINQUISHED BY/REMOVED FROM FEDEX DATE/TIME	RECEIVED BY/STORED IN DATE/TIME 9-4-15 0850	
RELINQUISHED BY/REMOVED FROM DATE/TIME	RECEIVED BY/STORED IN DATE/TIME	
RELINQUISHED BY/REMOVED FROM DATE/TIME	RECEIVED BY/STORED IN DATE/TIME	
RELINQUISHED BY/REMOVED FROM DATE/TIME	RECEIVED BY/STORED IN DATE/TIME	

LABORATORY SECTION	**RECEIVED BY**	**TITLE**	**DATE/TIME**
FINAL SAMPLE DISPOSITION	**DISPOSAL METHOD**	**DISPOSED BY**	**DATE/TIME**

PRINTED ON 8/24/2015 **FSR ID = FSR1220** **TRVL NUM = TRVL-15-112** A-6003-618 (REV 2)

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: CPRC			**SDG/AR/COC/Work Order:** 380051
Received By: ML			**Date Received:** 9-4-15
Suspected Hazard Information	**Yes**	**No**	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): cpm 0
Classified Radioactive II or III by RSO?		✓	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?		✓	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		✓	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		✓	

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	✓			Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius 2 C
2a	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: 201404337 Secondary Temperature Device Serial # (If Applicable):
3	Chain of custody documents included with shipment?	✓			
4	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	✓			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples have headspace as required?		✓		Sample ID's and containers affected:
7	VOA vials contain acid preservation?		✓		(If unknown, select No)
8	VOA vials free of headspace (defined as < 6mm bubble)?		✓		Sample ID's and containers affected:
9	Are Encore containers present?			✓	(If yes, immediately deliver to Volatiles laboratory)
10	Samples received within holding time?	✓			ID's and tests affected:
11	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
12	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
13	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
14	Are sample containers identifiable as GEL provided?			✓	
15	COC form is properly signed in relinquished/received sections?	✓			
16	Carrier and tracking number.	✓			Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other 7744 3504 13 50 7744 3638 0840

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials HS Date 9/4/15 Page 1 of 1 GL-CHL-SR-001 Rev 2

Data Review Qualifier Definitions

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 (843) 556−8171

Report Date: 28−SEP−15

Project Specific Qualifier Definitions for GEL Client Code: CPRC

Code	Status	Qualifier Definition	CofA	Department	Fraction	Additional Comments
U	Programmed	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.	Y			Includes MDA, TPU, count uncert.
J	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).Value is estimated	Y	Organics		Organics only
P	Programmed	Aroclor target analyte with greater than 25% difference between column analyses.	Y	Organics		PCB only
C	Manual	Analyte has been confirmed by GC/MS analysis	Y	Organics	Pesticide	IF GC/MS confirmation was attempted but unsuccessful do not qualify with C
B	Programmed	The analyte was detected in both the associated QC blank and in the sample.	Y	Organics		
E	Manual	Concentration exceeds the calibration range of the instrument	Y	Organics		Qualifier Uploaded
A	Manual	The TIC is a suspected aldol−condensation product	Y	Organics	Semi−Volatile	Uploaded with TIC
X	Programmed	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			Replaces H Hold Date In RAD replaces UI. Same usage as standard X as well.
N	Programmed	Spike Sample recovery is outside control limits.	Y			
*	Programmed	Duplicate analysis not within control limits	Y	Inorganics		
>	Programmed	Result greater than quantifiable range or greater than upper limit of the analysis range	Y	General Chemistry		
Z	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
B	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Y	Inorganics	Metals	Replaces J Estimated Value
D	Programmed	Results are reported from a diluted aliquot of sample.	Y			Dilution
E	Programmed	Reported value is estimated due to interferences. See comment in narrative.	Y	Inorganics	Metals	GEL E
M	Manual	Duplicate precision not met.	Y	Inorganics	Metals	Replaces *
o	Programmed	Analyte failed to recover within LCS limits (0rganics only)	Y	Organics		
S	Manual	Reported value determined by the Method of Standard Additions (MSA)	Y	Inorganics		Not coded B/C Rarely preformed
T	Programmed	Spike and/or spike duplicate sample recovery is outside control limits.	Y	Organics		GC/MS only
W	Manual	Post−digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Y	Inorganics		No GFAA in house.
B	Programmed	The associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample	Y	Radiological		
Y	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
+	Manual	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Y	Inorganics		
B	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Y	General Chemistry		Replaces J Estimated Value
C	Programmed	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Y	Inorganics	Metals	Replaces B Blank Detection
C	Programmed	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Y	General Chemistry		Replaces B Blank Detection
<	Programmed	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	Y	General Chemistry		for Reactive CN/S

GEL LABORATORIES LLC
2040 Savage Road Charleston, SC 29407 (843) 556−8171

Report Date: 28−SEP−15

Project Specific Qualifier Definitions for GEL Client Code: CPRC

Code	Status	Qualifier Definition	CofA	Department	Fraction	Additional Comments
UX	Manual	Gamma Spectroscopy−−Uncertain identification	Y	Radiological		

Laboratory Certifications

List of current GEL Certifications as of 28 September 2015

State	Certification
Alaska	UST−110
Arkansas	88−0651
CLIA	42D0904046
California	2940 Interim
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC000122013−10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−12−00283, P330−12−00284
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013−10
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA150001
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC000122013−10
Nebraska	NE−OS−26−13
Nevada	SC000122016−1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
Oklahoma	9904
Pennsylvania NELAP	68−00485
Plant Material Permit	PDEP−12−00260
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−15−10
Utah NELAP	SC000122015−18
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL380651
Work Order #: 380651

Sample ID	Client ID
380651001	B31TW3
1203388398	Method Blank (MB)**ICP**
1203388399	Laboratory Control Sample (LCS)
1203388405	380651001(B31TW3L) Serial Dilution (SD)
1203388403	380651001(B31TW3S) Matrix Spike (MS)
1203388404	380651001(B31TW3SD) Matrix Spike Duplicate (MSD)
1203390210	380651001(B31TW3PS) Post Spike (PS)

Sample Analysis

Sample 380651 001 in this SDG was analyzed for metals on an "as received" basis.

Method/Analysis Information

Analytical Batch:	1505861
Prep Batch :	1505860
Standard Operating Procedures:	GL-MA-E-013 REV# 24 and GL-MA-E-006 REV# 12
Analytical Method:	6010_METALS_ICP
Prep Method :	SW846 3005A

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

System Configuration

The Metals analysis-ICP was performed on a P E 5300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with an ESI SC-FAST introduction, cyclonic spray chamber, and yttrium or scandium internal standard.

Calibration Information

Instrument Calibration
All initial calibration requirements have been met for this sample delivery group (SDG).

CRDL/PQL Requirements
The CRDL/PQL standard recoveries met the referenced advisory control limits.

ICSA/ICSAB Statement

All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

Continuing Calibration Blanks (CCB) Requirements
All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

Continuing Calibration Verification (CCV) Requirements
All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

Quality Control (QC) Information

Method Blank (MB) Statement
The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery
The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Sample Statement
The following sample was selected as the quality control (QC) sample for this SDG: 380651001 (B31TW3).

Matrix Spike (MS/MSD) Recovery Statement
The percent recoveries (%R) obtained from the MS/MSD analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike met the recommended quality control acceptance criteria for percent recoveries for all applicable analytes.

MS/MSD Relative Percent Difference (RPD) Statement
The relative percent difference (RPD) obtained from the designated matrix spike duplicate (MSD) is evaluated based on acceptance criteria of 20%. The RPD values between qualifying analyte results in the MS and MSD were within the acceptance limits.

Post Spike (PS) Recovery Statement
The PS met the recommended quality control acceptance criteria for percent recoveries for all applicable analytes and verifies the absence of matrix interferences in the post-digested sample.

Serial Dilution % Difference Statement
All applicable analytes in the serial dilution (SDILT) demonstrated acceptable correlation to its associated sample and met the established acceptance percent difference criteria.

Technical Information

Holding Time Specifications
GEL assigns holding times based on the associated methodology. Holding time is measured by comparison of the date and time of sample collection to the date and time of sample preparation and analysis. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification
All procedures were performed as stated in the SOP.

Sample Dilutions
The sample in this SDG did not require dilutions.

Preparation Information
The sample in this SDG was not diluted and prepared according to the cited SOP.

Miscellaneous Information

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:
Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Data Exception (DER) Documentation

A data exception report was not required for this SDG.

Additional Comments

Additional comments were not required for this SDG.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL380651 GEL Work Order: 380651

The Qualifiers in this report are defined as follows:

* Duplicate analysis not within control limits

B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).

D Results are reported from a diluted aliquot of sample.

N Spike Sample recovery is outside control limits.

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:  **Name: Nik-Cole Elmore**

Date: 01 OCT 2015 **Title: Data Validator**

Sample Data Summary

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL380651 **METHOD TYPE:** SW846

SAMPLE ID: 380651001 **CLIENT ID:** B31TW3

CONTRACT: CPRC0F15028

MATRIX: WATER **DATE RECEIVED** 04−SEP−15 **LEVEL:** Low

CAS No	Analyte	Result	Units	C	Qual	M*	MDL	DF	Inst ID	Analytical Run
7440−47−3	Chromium	1	ug/L	U		P	1	1	OPTIMA3	090915−1

***Analytical Methods:**

P **SW846 3005A/6010C**

Quality Control Summary

GEL LABORATORIES LLC
2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: October 1, 2015

CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington

Contact: **Mr. Scot Fitzgerald**

Workorder: **380651**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch 1505861											
QC1203388399 LCS											
Chromium	500			488	ug/L		97.6	(80%-120%)	HSC	09/09/15	10:30
QC1203388398 MB											
Chromium			U	ND	ug/L					09/09/15	10:27
QC1203388403 380651001 MS											
Chromium	500	U ND		490	ug/L		97.9	(75%-125%)		09/09/15	11:05
QC1203388404 380651001 MSD											
Chromium	500	U ND		471	ug/L	3.96	94.1	(0%-20%)		09/09/15	11:09
QC1203388405 380651001 SDILT											
Chromium		U ND	DU	ND	ug/L	N/A		(0%-10%)		09/09/15	11:12

Notes:

The Qualifiers in this report are defined as follows:

*	Duplicate analysis not within control limits
+	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
D	Results are reported from a diluted aliquot of sample.
E	Reported value is estimated due to interferences. See comment in narrative.
M	Duplicate precision not met.
N	Spike Sample recovery is outside control limits.
S	Reported value determined by the Method of Standard Additions (MSA)
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
W	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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QC Summary

Workorder: **380651**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

General Chem Analysis

Case Narrative

General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL380651
Work Order #: 380651

Method/Analysis Information

Product:	**Alkalinity**		
Analytical Batch:	1506088	**Method:**	2320_ALKALINITY: COMMON + (ADD ON)

Sample Analysis

The following samples were analyzed using the analytical protocol as established in 2320_ALKALINITY:

Sample ID	Client ID
380651001	B31TW3
1203389245	Method Blank (MB)
1203389246	Laboratory Control Sample (LCS)
1203389078	380102002(B31XX0) Sample Duplicate (DUP)
1203389079	380651001(B31TW3) Sample Duplicate (DUP)

Sample 380651 001 in this SDG was analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-033 REV# 11.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Titration and Ion analysis was performed on a manually operated buret.

Initial Standardization

The titrant was properly standardized

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation
Samples 380102002 (B31XX0) and 380651001 (B31TW3) were selected for QC analysis.

Duplicate Relative Percent Difference (RPD) Statement
The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times
All samples in this SDG met the specified holding time.

Sample Dilutions
The samples in this SDG did not require dilutions.

Sample Re-analysis
The samples in this SDG did not require re-analysis.

Miscellaneous Information

Data Exception (DER) Documentation
Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Additional Comments
Additional comments were not required for this SDG.

Electronic Packaging Comment
This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:
Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

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Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL380651 GEL Work Order: 380651

The Qualifiers in this report are defined as follows:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:  **Name: Thomas Lewis**

Date: 30 SEP 2015 **Title: Data Validator**

Sample Data Summary

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: September 30, 2015

Company :	CH2MHill Plateau Remediation Company
Address :	MSIN R3-50 CHPRC PO Box 1600 Richland, Washington 99352
Contact:	Mr. Scot Fitzgerald
Project:	CHPRC SAF F15-028

Client Sample ID:	B31TW3	Project:	CPRC0F15028
Sample ID:	380651001	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	26-AUG-15 12:55		
Receive Date:	04-SEP-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Titration and Ion Analysis											
2320_ALKALINITY: COMMON + (ADD ON) "As Received"											
Alkalinity, Total as CaCO3		124000	725	1000	ug/L		SXC5	09/08/15	1439	1506088	1
Bicarbonate alkalinity (CaCO3)		124000	725	1000	ug/L						
Carbonate alkalinity (CaCO3)	U	725	725	1000	ug/L						
Hydroxide alkalinity as CaCO3	U	725	725	1000	ug/L						

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	2320_ALKALINITY	

Notes:

Quality Control Summary

GEL LABORATORIES LLC
2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: September 30, 2015

CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington

Contact: **Mr. Scot Fitzgerald**

Workorder: **380651**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Titration and Ion Analysis										
Batch 1506088										
QC1203389078 380102002 DUP										
Alkalinity, Total as CaCO3		95300		85300	ug/L	11.1		(0%-20%)	SXC5	09/08/15 14:32
Bicarbonate alkalinity (CaCO3)		95300		85300	ug/L	11.1		(0%-20%)		
Carbonate alkalinity (CaCO3)	U	725	U	725	ug/L	N/A				
Hydroxide alkalinity as CaCO3	U	725	U	725	ug/L	N/A				
QC1203389079 380651001 DUP										
Alkalinity, Total as CaCO3		124000		123000	ug/L	0.81		(0%-20%)		09/08/15 14:43
Bicarbonate alkalinity (CaCO3)		124000		123000	ug/L	0.81		(0%-20%)		
Carbonate alkalinity (CaCO3)	U	725	U	725	ug/L	N/A				
Hydroxide alkalinity as CaCO3	U	725	U	725	ug/L	N/A				
QC1203389246 LCS										
Alkalinity, Total as CaCO3	50000			49100	ug/L		98.3	(90%-110%)		09/08/15 13:15
QC1203389245 MB										
Alkalinity, Total as CaCO3			U	725	ug/L					09/08/15 13:12
Bicarbonate alkalinity (CaCO3)			U	725	ug/L					
Carbonate alkalinity (CaCO3)			U	725	ug/L					
Hydroxide alkalinity as CaCO3			U	725	ug/L					

Notes:

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.

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QC Summary

Workorder: **380651**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

N Spike Sample recovery is outside control limits.

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Radiological Analysis

Radiochemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL380651
Work Order #: 380651

Method/Analysis Information

Product:	**UISO_PLATE_AEA:COMMON**
Analytical Method:	UISO_IE_PRECIP_AEA
Analytical Batch Number:	1505719

Sample ID	Client ID
380651001	B31TW3
1203387988	Method Blank (MB)
1203387990	Laboratory Control Sample (LCS)
1203387989	380651001(B31TW3) Sample Duplicate (DUP)

Sample 380651 001 in this SDG was analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 25.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

The blank volume is representative of the sample volumes in this batch.

Designated QC

The following sample was used for QC: 380651001 (B31TW3).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Recounts
Samples were recounted due to a suspected blank false positive. The recounts are reported.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Manual Integration
No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**PUISO_PLATE_AEA:COMMON**
Analytical Method:	PUISO_PLATE_AEA
Analytical Batch Number:	1505721

Sample ID	Client ID
380651001	B31TW3
1203387993	Method Blank (MB)
1203387995	Laboratory Control Sample (LCS)
1203387994	380651001(B31TW3) Sample Duplicate (DUP)

Sample 380651 001 in this SDG was analyzed on an "as received" basis.
SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 25.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 380651001 (B31TW3).

QC Information
All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Recounts
Sample 1203387994 (B31TW3DUP) was recounted due to a suspected false positive. The recount is reported.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Manual Integration
No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**AMCMISO_EIE_PRECIP_AEA: COMMON**
Analytical Method:	AMCMISO_EIE_PREC_AEA
Analytical Batch Number:	1505723

Sample ID	Client ID
380651001	B31TW3
1203387997	Method Blank (MB)
1203387999	Laboratory Control Sample (LCS)
1203387998	380651001(B31TW3) Sample Duplicate (DUP)

Sample 380651 001 in this SDG was analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 25.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

Designated QC

The following sample was used for QC: 380651001 (B31TW3).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Manual Integration
No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**I129_SEP_LEPS_GS: COMMON**
Analytical Method:	DOE EML HASL-300,I-01 Modified
Analytical Batch Number:	1504214

Sample ID	Client ID
380651001	B31TW3
1203384335	Method Blank (MB)
1203384338	Laboratory Control Sample (LCS)
1203384336	380251001(B31TW8) Sample Duplicate (DUP)
1203384337	380251001(B31TW8) Matrix Spike (MS)

Sample 380651 001 in this SDG was analyzed on an "as received" basis.
SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-006 REV# 21.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used

before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 380251001 (B31TW8).

QC Information
All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Recounts
None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**GAMMA_GS:COMMON (Cs137,Co60,Eu152,Eu154,Eu155)**
Analytical Method:	901.1_GAMMA_GS
Analytical Batch Number:	1505824

Sample ID	Client ID
380651001	B31TW3
1203388290	Method Blank (MB)
1203388293	Laboratory Control Sample (LCS)
1203388291	380339001(B31TW6) Sample Duplicate (DUP)

Sample 380651 001 in this SDG was analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-013 REV# 25.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

Designated QC

The following sample was used for QC: 380339001 (B31TW6).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**SRTOT_SEP_PRECIP_GPC: COMMON**
Analytical Method:	SRTOT_SEP_PRECIP_GPC
Analytical Batch Number:	1506138

Sample ID	Client ID
380651001	B31TW3
1203389202	Method Blank (MB)
1203389204	Laboratory Control Sample (LCS)
1203389203	380709001(B31TX7) Sample Duplicate (DUP)

Sample 380651 001 in this SDG was analyzed on an "as received" basis.
SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-004 REV# 17.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 380709001 (B31TX7).

QC Information
All of the QC samples meet the required acceptance limits with the following exceptions: The sample and the duplicate, 1203389203 (B31TX7DUP) , did not meet the relative percent difference requirement; however, they do meet the relative error ratio requirement with a value of 1.77.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Chemical Recoveries
All chemical recoveries meet the required acceptance limits for this sample set.

Recounts
Sample 1203389202 (MB) was recounted due to a suspected blank false positive. The recount is reported.
Sample 1203389203 (B31TX7DUP) was recounted due to high relative percent difference/relative error ratio. The recount is reported.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**C14_LSC: COMMON**
Analytical Method:	C14_LSC
Analytical Batch Number:	1506248

Sample ID	Client ID
380651001	B31TW3
1203389510	Method Blank (MB)
1203389513	Laboratory Control Sample (LCS)
1203389511	380709001(B31TX7) Sample Duplicate (DUP)

Sample 380651 001 in this SDG was analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-003 REV# 15.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

Designated QC

The following sample was used for QC: 380709001 (B31TX7).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

Sample 380651001 (B31TW3) was recounted to verify sample results. The recount result is similar to the original result. Original result is reported.

Miscellaneous Information:

Data Exception (DER) Documentation

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

The matrix spike, 1203389512 (B31TX7MS), aliquot was reduced to conserve sample volume.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**TRITIUM_DIST_LSC: COMMON**
Analytical Method:	TRITIUM_DIST_LSC
Analytical Batch Number:	1507565

Sample ID	Client ID
380651001	B31TW3
1203393075	Method Blank (MB)
1203393080	Laboratory Control Sample (LCS)
1203393076	380994002(B31TY6) Sample Duplicate (DUP)
1203393078	380994002(B31TY6) Matrix Spike (MS)

Sample 380651 001 in this SDG was analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-002 REV# 21.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

Designated QC

The following sample was used for QC: 380994002 (B31TY6).

QC Information

All of the QC samples meet the required acceptance limits with the following exceptions: The blank, 1203393075 (MB), did not meet the detection limit due to keeping the blank volume consistent with the other sample aliquots. All other samples met the detection limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Recounts
Samples were recounted due to low recovery. The recounts are reported.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**TC99_EIE_LSC: COMMON**
Analytical Method:	TC99_EIE_LSC
Analytical Batch Number:	1507940

Sample ID	Client ID
380651001	B31TW3
1203394068	Method Blank (MB)
1203394071	Laboratory Control Sample (LCS)
1203394069	381168001(B32CM0) Sample Duplicate (DUP)

Sample 380651 001 in this SDG was analyzed on an "as received" basis.
SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-059 REV# 3.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 381168001 (B32CM0).

QC Information
All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Recounts
Sample 1203394071 (LCS) was recounted due to low recovery. The recount is reported. Samples 380651001 (B31TW3) were recounted to verify sample results. The recount results are similar to the original results. Recounts are reported.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

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Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL380651 GEL Work Order: 380651

The Qualifiers in this report are defined as follows:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: Heather McCarty **Name:** **Heather McCarty**

Date: **01 OCT 2015** **Title:** **Analyst II**

Sample Data Summary

Certificate of Analysis
Sample Summary

SDG Number:	**GEL380651**	**Client:**	**CPRC001**	**Project:**	**CPRC0F15028**
Lab Sample ID:	**380651001**	**Date Collected:**	**08/26/2015 12:55**	**Matrix:**	**WATER**
		Date Received:	**09/04/2015 08:50**		
Client ID:	**B31TW3**			**Prep Basis:**	**"As Received"**
Batch ID:	**1505719**	**Method:**	**UISO_IE_PRECIP_AEA**	**SOP Ref:**	**GL-RAD-A-011**
Run Date:	**09/28/2015 12:37**	**Analyst:**	**JXD2**	**Instrument:**	**1013**
Data File:	**S0380651001_UU.2A.gcnf**	**Aliquot:**	**0.05 L**	**Count Time:**	**239.9998 min**
Prep Batch:	**1505719**	**Prep Method:**	**DOE EML HASL-300, U-02-R**		
Prep Date:	**09/15/2015 00:00**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
U-233/234 *13968-55-3/13966-29-5*	Uranium-233/234		2.78	pCi/L	+/-1.18	1.25	0.586	1.00
15117-96-1/13982-7	Uranium-235/236	U	0.719	pCi/L	+/-0.732	0.740	0.724	1.00
7440-61-1	Uranium-238		2.41	pCi/L	+/-1.10	1.16	0.586	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Uranium-232 Tracer	37.0	42.4	pCi/L	87.4	(15%-125%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Certificate of Analysis
Sample Summary

SDG Number:	**GEL380651**	**Client:**	**CPRC001**	**Project:**	**CPRC0F15028**
Lab Sample ID:	**380651001**	**Date Collected:**	**08/26/2015 12:55**	**Matrix:**	**WATER**
		Date Received:	**09/04/2015 08:50**		
Client ID:	**B31TW3**			**Prep Basis:**	**"As Received"**
Batch ID:	**1505721**	**Method:**	**PUISO_PLATE_AEA**	**SOP Ref:**	**GL-RAD-A-011**
Run Date:	**09/17/2015 13:59**	**Analyst:**	**JXD2**	**Instrument:**	**1089**
Data File:	**S0380651001_PU.1A.gcnf**	**Aliquot:**	**0.05 L**	**Count Time:**	**505 min**
Prep Batch:	**1505721**	**Prep Method:**	**DOE EML HASL-300, Pu-11-**		
Prep Date:	**09/15/2015 00:00**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
13981-16-3	Plutonium-238	U	-0.102	pCi/L	+/-0.355	0.355	0.873	1.00
OER-100-70	Plutonium-239/240	U	0.299	pCi/L	+/-0.470	0.471	0.705	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Plutonium-242 Tracer	24.2	39.6	pCi/L	61.2	(15%-125%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Certificate of Analysis
Sample Summary

SDG Number:	**GEL380651**	**Client:**	**CPRC001**	**Project:**	**CPRC0F15028**
Lab Sample ID:	**380651001**	**Date Collected:**	**08/26/2015 12:55**	**Matrix:**	**WATER**
		Date Received:	**09/04/2015 08:50**		
Client ID:	**B31TW3**			**Prep Basis:**	**"As Received"**
Batch ID:	**1505723**	**Method:**	**AMCMISO_EIE_PREC_AEA**	**SOP Ref:**	**GL-RAD-A-011**
Run Date:	**09/17/2015 15:08**	**Analyst:**	**JXD2**	**Instrument:**	**1102**
Data File:	**S0380651001_AM.1A.gcnf**	**Aliquot:**	**0.05 L**	**Count Time:**	**719.9998 min**
Prep Batch:	**1505723**	**Prep Method:**	**DOE EML HASL-300, Am-05**		
Prep Date:	**09/15/2015 00:00**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14596-10-2	Americium-241	U	0.159	pCi/L	+/-0.234	0.234	0.323	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	32.3	42.8	pCi/L	75.4	(15%-125%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Certificate of Analysis
Sample Summary

SDG Number:	**GEL380651**	**Client:**	**CPRC001**	**Project:**	**CPRC0F15028**
Lab Sample ID:	**380651001**	**Date Collected:**	**08/26/2015 12:55**	**Matrix:**	**WATER**
		Date Received:	**09/04/2015 08:50**		
Client ID:	**B31TW3**			**Prep Basis:**	**"As Received"**
Batch ID:	**1506138**	**Method:**	**SRTOT_SEP_PRECIP_GPC**	**SOP Ref:**	**GL-RAD-A-004**
Run Date:	**09/22/2015 13:06**	**Analyst:**	**KSD1**	**Instrument:**	**LB4100G1**
Data File:	**S1506138r1.xls**	**Aliquot:**	**300 mL**	**Count Time:**	**70 min**
Prep Batch:	**1506138**	**Prep Method:**	**EPA 905.0 Modified/DOE RP5**		
Prep Date:	**09/18/2015 00:00**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
SR-RAD	Total Strontium		4000	pCi/L	+/-28.2	933	1.81	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	7.80	8.10	mg	96.3	(25%-125%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Certificate of Analysis
Sample Summary

SDG Number:	**GEL380651**	**Client:**	**CPRC001**	**Project:**	**CPRC0F15028**
Lab Sample ID:	**380651001**	**Date Collected:**	**08/26/2015 12:55**	**Matrix:**	**WATER**
		Date Received:	**09/04/2015 08:50**		
Client ID:	**B31TW3**			**Prep Basis:**	**"As Received"**
Batch ID:	**1504214**	**Method:**	**DOE EML HASL-300,I-01 Mo**	**SOP Ref:**	**GL-RAD-A-006**
Run Date:	**09/11/2015 14:01**	**Analyst:**	**MJH1**	**Instrument:**	**XRAY4**
Data File:	**I380651001.CNF;2**	**Aliquot:**	**0.3 L**	**Count Time:**	**90 min**
Prep Batch:	**1504214**	**Prep Method:**	**DOE EML HASL-300,I-01 M**		
Prep Date:	**09/10/2015 00:00**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	-1.89	pCi/L	+/-2.69	2.83	4.44	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Rad

Certificate of Analysis
Sample Summary

SDG Number:	**GEL380651**	**Client:**	**CPRC001**	**Project:**	**CPRC0F15028**
Lab Sample ID:	**380651001**	**Date Collected:**	**08/26/2015 12:55**	**Matrix:**	**WATER**
		Date Received:	**09/04/2015 08:50**		
Client ID:	**B31TW3**			**Prep Basis:**	**"As Received"**
Batch ID:	**1505824**	**Method:**	**901.1_GAMMA_GS**	**SOP Ref:**	**GL-RAD-A-013**
Run Date:	**09/14/2015 08:09**	**Analyst:**	**MJH1**	**Instrument:**	**GAM25**
Data File:	**G380651001.CNF;1**	**Aliquot:**	**2 L**	**Count Time:**	**120 min**
Prep Batch:	**1505824**	**Prep Method:**	**EPA 901.1**		
Prep Date:	**09/11/2015 00:00**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10045-97-3	Cesium-137	U	0.867	pCi/L	+/-3.35	3.38	6.29	10.0
10198-40-0	Cobalt-60	U	3.87	pCi/L	+/-3.13	3.60	6.91	
14683-23-9	Europium-152	U	0.226	pCi/L	+/-9.90	9.90	17.3	
15585-10-1	Europium-154	U	-5.8	pCi/L	+/-9.29	9.66	16.3	
14391-16-3	Europium-155	U	-0.951	pCi/L	+/-11.6	11.6	19.6	

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Rad

Certificate of Analysis
Sample Summary

SDG Number:	**GEL380651**	**Client:**	**CPRC001**	**Project:**	**CPRC0F15028**
Lab Sample ID:	**380651001**	**Date Collected:**	**08/26/2015 12:55**	**Matrix:**	**WATER**
		Date Received:	**09/04/2015 08:50**		
Client ID:	**B31TW3**			**Prep Basis:**	**"As Received"**
Batch ID:	**1506248**	**Method:**	**C14_LSC**	**SOP Ref:**	**GL-RAD-A-003**
Run Date:	**09/23/2015 05:50**	**Analyst:**	**GXR1**	**Instrument:**	**LSCTEAL**
Data File:	**C1506248.xls**	**Aliquot:**	**300 mL**	**Count Time:**	**4.68333339691162 min**
Prep Batch:	**1506248**	**Prep Method:**	**EPA EERF C-01 Modified**		
Prep Date:	**09/22/2015 00:00**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14762-75-5	Carbon-14		4830	pCi/L	+/-94.2	901	13.3	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Rad

Certificate of Analysis
Sample Summary

SDG Number:	**GEL380651**	**Client:**	**CPRC001**	**Project:**	**CPRC0F15028**
Lab Sample ID:	**380651001**	**Date Collected:**	**08/26/2015 12:55**	**Matrix:**	**WATER**
		Date Received:	**09/04/2015 08:50**		
Client ID:	**B31TW3**			**Prep Basis:**	**"As Received"**
Batch ID:	**1507565**	**Method:**	**TRITIUM_DIST_LSC**	**SOP Ref:**	**GL-RAD-A-002**
Run Date:	**09/21/2015 19:51**	**Analyst:**	**GXR1**	**Instrument:**	**LSCPINK**
Data File:	**T1507565R.xls**	**Aliquot:**	**50 mL**	**Count Time:**	**120.0296 min**
Prep Batch:	**1507565**	**Prep Method:**	**EPA 906.0 Modified**		
Prep Date:	**09/17/2015 00:00**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		18500	pCi/L	+/-436	3610	109	100

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Certificate of Analysis
Sample Summary

SDG Number:	**GEL380651**	**Client:**	**CPRC001**	**Project:**	**CPRC0F15028**
Lab Sample ID:	**380651001**	**Date Collected:**	**08/26/2015 12:55**	**Matrix:**	**WATER**
		Date Received:	**09/04/2015 08:50**		
Client ID:	**B31TW3**			**Prep Basis:**	**"As Received"**
Batch ID:	**1507940**	**Method:**	**TC99_EIE_LSC**	**SOP Ref:**	**GL-RAD-A-059**
Run Date:	**09/30/2015 11:11**	**Analyst:**	**MYM1**	**Instrument:**	**LSCBLUE**
Data File:	**E1507940R.xls**	**Aliquot:**	**300 mL**	**Count Time:**	**20 min**
Prep Batch:	**1507940**	**Prep Method:**	**DOE EML HASL-300, Tc-02-**		
Prep Date:	**09/24/2015 00:00**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		29.6	pCi/L	+/-8.10	8.74	12.3	15.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	36900	38300	CPM	96.2	(15%-125%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Quality Control Data

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QC Summary

Client : **CH2MHill Plateau Remediation Company**
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: **Mr. Scot Fitzgerald**

Workorder: **380651**

Report Date: October 1, 2015

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch 1505719									
QC1203387988 MB									
Uranium-233/234			U	0.607	pCi/L			JXD2	09/28/1512:37
Uncert:				+/-0.710					
TPU:				+/-0.716					
Uranium-235/236			U	-0.079	pCi/L				
Uncert:				+/-0.349					
TPU:				+/-0.350					
Uranium-238			U	0.335	pCi/L				
Uncert:				+/-0.533					
TPU:				+/-0.535					
**Uranium-232 Tracer	42.3			36.6	pCi/L	REC: 86	(15%-125%)		
Uncert:				+/-4.72					
TPU:				+/-8.15					
QC1203387989 380651001 DUP									
Uranium-233/234		2.78		2.06	pCi/L				
Uncert:		+/-1.18		+/-1.06		RPD: 30	(0% - 100%)		
TPU:		+/-1.25		+/-1.10		RER: 0.847	(0-2)		
Uranium-235/236	U	0.719	U	0.382	pCi/L				
Uncert:		+/-0.732		+/-0.607		RPD: 0	N/A		
TPU:		+/-0.740		+/-0.610		RER: 0.689	(0-2)		
Uranium-238		2.41		3.25	pCi/L				
Uncert:		+/-1.10		+/-1.28		RPD: 30	(0% - 100%)		
TPU:		+/-1.16		+/-1.37		RER: 0.914	(0-2)		
**Uranium-232 Tracer	42.4	37.0		38.8	pCi/L	REC: 92	(15%-125%)		
Uncert:		+/-4.51		+/-4.52					
TPU:		+/-7.91		+/-7.92					
QC1203387990 LCS									
Uranium-233/234				51.5	pCi/L				
Uncert:				+/-5.17					
TPU:				+/-9.60					
Uranium-235/236				4.40	pCi/L				
Uncert:				+/-1.72					
TPU:				+/-1.86					
Uranium-238	54.3			48.6	pCi/L	REC: 89	(80%-120%)		
Uncert:				+/-5.02					
TPU:				+/-9.14					
**Uranium-232 Tracer	42.3			37.8	pCi/L	REC: 89	(15%-125%)		
Uncert:				+/-4.74					
TPU:				+/-8.17					
Batch 1505721									
QC1203387993 MB									
Plutonium-238			U	-0.0344	pCi/L			JXD2	09/17/1513:59
Uncert:				+/-0.227					
TPU:				+/-0.227					

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QC Summary

Workorder: 380651

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch 1505721									
Plutonium-239/240			U	0.132	pCi/L				
Uncert:				+/-0.328					
TPU:				+/-0.328					
**Plutonium-242 Tracer	39.6			31.5	pCi/L	REC: 80	(15%-125%)		
Uncert:				+/-3.21					
TPU:				+/-5.03					
QC1203387994 380651001 DUP									
Plutonium-238	U	-0.102	U	-0.0409	pCi/L				09/28/1512:36
Uncert:		+/-0.355		+/-0.195		RPD: 0	N/A		
TPU:		+/-0.355		+/-0.195		RER: 0.296	(0-2)		
Plutonium-239/240	U	0.299	U	-0.0825	pCi/L				
Uncert:		+/-0.470		+/-0.287		RPD: 0	N/A		
TPU:		+/-0.471		+/-0.287		RER: 1.35	(0-2)		
**Plutonium-242 Tracer	39.6	24.2		34.9	pCi/L	REC: 88	(15%-125%)		
Uncert:		+/-3.98		+/-3.51					
TPU:		+/-6.04		+/-5.43					
QC1203387995 LCS									
Plutonium-238				0.504	pCi/L				09/17/1513:59
Uncert:				+/-0.406					
TPU:				+/-0.409					
Plutonium-239/240	39.4			41.2	pCi/L	REC: 105	(80%-120%)		
Uncert:				+/-3.27					
TPU:				+/-5.19					
**Plutonium-242 Tracer	39.6			32.0	pCi/L	REC: 81	(15%-125%)		
Uncert:				+/-3.21					
TPU:				+/-5.03					
Batch 1505723									
QC1203387997 MB									
Americium-241			U	0.0839	pCi/L			JXD2	09/17/1515:08
Uncert:				+/-0.238					
TPU:				+/-0.238					
**Americium-243 Tracer	42.8			35.9	pCi/L	REC: 84	(15%-125%)		
Uncert:				+/-2.72					
TPU:				+/-4.52					
QC1203387998 380651001 DUP									
Americium-241	U	0.159	U	0.135	pCi/L				
Uncert:		+/-0.234		+/-0.198		RPD: 0	N/A		
TPU:		+/-0.234		+/-0.198		RER: 0.155	(0-2)		
**Americium-243 Tracer	42.8	32.3		40.4	pCi/L	REC: 94	(15%-125%)		
Uncert:		+/-2.81		+/-2.58					
TPU:		+/-4.62		+/-4.35					
QC1203387999 LCS									
Americium-241	39.5			32.9	pCi/L	REC: 83	(80%-120%)		
Uncert:				+/-2.29					
TPU:				+/-3.54					
**Americium-243 Tracer	42.8			39.6	pCi/L	REC: 93	(15%-125%)		
Uncert:				+/-2.60					
TPU:				+/-4.37					
Rad Gamma Spec									
Batch 1504214									

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QC Summary

Workorder: 380651

Parmname	NOM		Sample	Qual	QC	Units	QC Criteria		Range	Analyst	Date Time
Rad Gamma Spec											
Batch 1504214											
QC1203384335 MB											
Iodine-129				U	-0.0468	pCi/L				MJH1	09/11/1515:32
	Uncert:				+/-0.390						
	TPU:				+/-0.390						
QC1203384336 380251001 DUP											
Iodine-129		U	0.114	U	0.240	pCi/L					09/11/1515:32
	Uncert:		+/-1.66		+/-1.45		RPD:	0	N/A		
	TPU:		+/-1.66		+/-1.45		RER:	0.112	(0-2)		
QC1203384337 380251001 MS											
Iodine-129	139	U	0.114		132	pCi/L	REC:	95	(75%-125%)		09/11/1515:33
	Uncert:		+/-1.66		+/-18.9						
	TPU:		+/-1.66		+/-23.2						
QC1203384338 LCS											
Iodine-129	27.7				26.2	pCi/L	REC:	94	(80%-120%)		09/11/1515:33
	Uncert:				+/-2.16						
	TPU:				+/-3.39						
Batch 1505824											
QC1203388290 MB											
Cesium-137				U	-0.526	pCi/L				MJH1	09/14/1509:34
	Uncert:				+/-2.44						
	TPU:				+/-2.45						
Cobalt-60				U	1.88	pCi/L					
	Uncert:				+/-2.78						
	TPU:				+/-2.91						
Europium-152				U	-4.93	pCi/L					
	Uncert:				+/-6.97						
	TPU:				+/-7.33						
Europium-154				U	-1.83	pCi/L					
	Uncert:				+/-6.46						
	TPU:				+/-6.52						
Europium-155				U	-1.56	pCi/L					
	Uncert:				+/-7.53						
	TPU:				+/-7.57						
QC1203388291 380339001 DUP											
Cesium-137		U	1.45	U	1.85	pCi/L					09/14/1509:38
	Uncert:		+/-2.96		+/-3.48		RPD:	0	N/A		
	TPU:		+/-3.03		+/-3.58		RER:	0.166	(0-2)		
Cobalt-60		U	-1.67	U	1.68	pCi/L					
	Uncert:		+/-3.26		+/-3.23		RPD:	0	N/A		
	TPU:		+/-3.35		+/-3.32		RER:	1.39	(0-2)		
Europium-152		U	4.93	U	-3.67	pCi/L					
	Uncert:		+/-8.26		+/-9.60		RPD:	0	N/A		
	TPU:		+/-8.57		+/-9.75		RER:	1.3	(0-2)		
Europium-154		U	-2.98	U	6.33	pCi/L					
	Uncert:		+/-8.81		+/-6.54		RPD:	0	N/A		
	TPU:		+/-8.91		+/-7.15		RER:	1.6	(0-2)		
Europium-155		U	11.0	U	2.43	pCi/L					
	Uncert:		+/-11.1		+/-11.9		RPD:	0	N/A		
	TPU:		+/-12.2		+/-12.0		RER:	0.977	(0-2)		
QC1203388293 LCS											

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria		Range	Analyst	Date Time
Rad Gamma Spec										
Batch 1505824										
Americium-241	34400			37600	pCi/L	REC:	109	(80%-120%)		
Uncert:				+/-1270						
TPU:				+/-4860						
Cesium-137	13700			14000	pCi/L	REC:	102	(80%-120%)		
Uncert:				+/-327						
TPU:				+/-1220						
Cobalt-60	15000			15200	pCi/L	REC:	102	(80%-120%)		
Uncert:				+/-381						
TPU:				+/-1240						
Europium-152			U	-44.2	pCi/L					
Uncert:				+/-199						
TPU:				+/-200						
Europium-154			U	63.0	pCi/L					
Uncert:				+/-129						
TPU:				+/-132						
Europium-155			U	53.0	pCi/L					
Uncert:				+/-262						
TPU:				+/-264						
Rad Gas Flow										
Batch 1506138										
QC1203389202 MB										
Total Strontium			U	1.65	pCi/L				KSD1	09/22/1515:22
Uncert:				+/-1.19						
TPU:				+/-1.25						
**Strontium Carrier	8.10			8.10	mg	REC:	100	(25%-125%)		
QC1203389203 380709001 DUP										
Total Strontium		27.5		38.0	pCi/L					09/23/1508:12
Uncert:		+/-2.52		+/-3.17		RPD:	32*	(0% - 20%)		
TPU:		+/-6.96		+/-9.36		RER:	1.77	(0-2)		
**Strontium Carrier	16.2	8.10		12.8	mg	REC:	79	(25%-125%)		
QC1203389204 LCS										
Total Strontium	72.4			73.9	pCi/L	REC:	102	(80%-120%)		09/22/1513:02
Uncert:				+/-4.15						
TPU:				+/-17.5						
**Strontium Carrier	8.10			8.30	mg	REC:	102	(25%-125%)		
Rad Liquid Scintillation										
Batch 1506248										
QC1203389510 MB										
Carbon-14			U	-0.612	pCi/L				GXR1	09/23/1507:58
Uncert:				+/-1.91						
TPU:				+/-1.91						
QC1203389511 380709001 DUP										
Carbon-14		143		130	pCi/L					09/23/1509:59
Uncert:		+/-3.82		+/-13.6		RPD:	9	(0% - 20%)		
TPU:		+/-26.8		+/-27.8		RER:	0.647	(0-2)		
QC1203389512 380709001 MS										
Carbon-14	1510	143		1690	pCi/L	REC:	102	(75%-125%)		09/23/1512:00
Uncert:		+/-3.82		+/-37.9						
TPU:		+/-26.8		+/-316						

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Liquid Scintillation									
Batch 1506248									
QC1203389513 LCS									
Carbon-14	252			256	pCi/L	REC: 101	(80%-120%)		09/23/1513:11
	Uncert:			+/-5.84					
	TPU:			+/-47.9					
Batch 1507565									
QC1203393075 MB									
Tritium			U	23.8	pCi/L			GXR1	09/22/1509:21
	Uncert:			+/-62.3					
	TPU:			+/-62.5					
QC1203393076 380994002 DUP									
Tritium		133		164	pCi/L				09/22/1511:24
	Uncert:	+/-70.3		+/-73.0		RPD: 21	(0% - 100%)		
	TPU:	+/-74.8		+/-79.6		RER: 0.563	(0-2)		
QC1203393078 380994002 MS									
Tritium	1810	133		1510	pCi/L	REC: 76	(75%-125%)		09/21/1509:03
	Uncert:	+/-70.3		+/-360					
	TPU:	+/-74.8		+/-463					
QC1203393080 LCS									
Tritium	1800			1630	pCi/L	REC: 90	(80%-120%)		09/21/1509:20
	Uncert:			+/-376					
	TPU:			+/-491					
Batch 1507940									
QC1203394068 MB									
Technetium-99			U	-5.18	pCi/L			MYM1	09/29/1519:49
	Uncert:			+/-4.44					
	TPU:			+/-4.44					
**Technetium-99m Tracer	38300			37400	CPM	REC: 98	(15%-125%)		
QC1203394069 381168001 DUP									
Technetium-99	U	-3.26	U	-4.16	pCi/L				09/29/1520:37
	Uncert:	+/-6.65		+/-7.16		RPD: 0	N/A		
	TPU:	+/-6.65		+/-7.16		RER: 0.182	(0-2)		
**Technetium-99m Tracer	38300	38500		35400	CPM	REC: 92	(15%-125%)		
QC1203394071 LCS									
Technetium-99	287			247	pCi/L	REC: 86	(80%-120%)		09/30/1509:43
	Uncert:			+/-12.9					
	TPU:			+/-30.3					
**Technetium-99m Tracer	38300			38600	CPM	REC: 101	(15%-125%)		

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- B The associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time

C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
D	Results are reported from a diluted aliquot of sample.
E	Reported value is estimated due to interferences. See comment in narrative.
M	Duplicate precision not met.
N	Spike Sample recovery is outside control limits.
S	Reported value determined by the Method of Standard Additions (MSA)
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
UX	Gamma Spectroscopy--Uncertain identification
W	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
** Indicates analyte is a surrogate compound.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptence criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.